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EXAMINER

HUYNH, SON P

ART UNIT	PAPER NUMBER
2623	

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Please find below and/or attached an Office communication concerning this application or proceeding.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 03/30/2006 have been fully considered but they are not persuasive.

Applicant argues Mao and Wu fail to teach, disclose or suggest "predicting future bandwidth availability based on the statistical multiplexing of the formatted content stream; and selectively multiplexing formatted non-content data into said output stream on a future bandwidth availability basis." (Page 7, paragraphs 2-4).

In response, this argument is respectfully traversed. Wu discloses the bandwidth allocation is assigned to Opportunistic Data Processor (ODP) for providing formatted opportunistic data **after** the bandwidth for encoded source data is calculated and available/spare bandwidth is determined. The ODP provides formatted opportunistic data for multiplexing only **after** the available/spare bandwidth is determined and bandwidth allocation for formatted opportunistic data is received. The TSPs also provide encoded source data for multiplexing **after** bandwidth allocations are assigned (col. 2, lines 13-38; col. 4, lines 38-47, col. 5, lines 10-52, col. 6, lines 17-27). Therefore, the claimed feature "predicting future bandwidth availability based on the statistical multiplexing of the formatted content" is broadly met by **after** calculating the bandwidth for encoded source data, predicting/assigning bandwidth allocation for formatted opportunistic data to be multiplexed later into the stream; the claimed feature

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“selectively multiplexing formatted non-content data into said output stream on a future bandwidth availability basis” is broadly met by selectively multiplexing formatted opportunistic data into the bandwidth allocation for later multiplexing the formatted opportunistic data into the stream; wherein the encoded source data read on claimed “formatted content”, formatted opportunistic data read on claimed “formatted non-content data”; determining/calculating available/spare bandwidth and providing bandwidth allocation for later multiplexing formatted opportunistic data into the stream after calculating bandwidth for encoded source data broadly read on predicting “future bandwidth availability”.

For the reason given above, rejections on claims 32-44 are maintained as discussed in Final Rejection and repeatedly discussed below.

Claims 1-31 have been canceled.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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3. Claims 32-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mao et al. (US 6,886,178) in view of Wu et al. (US 6,594,271).

Regarding claim 32, Mao teaches an information distribution system comprising server equipment (programmer 24 and headend 10 – figure 1) for providing both content and non-content data (video data and webpage and information data) to subscriber equipment (set top 38, TV 40, remote control 36), the server equipment comprising:

a multiplex switch (MPEG remux 14, proxy server 22, computer 32 – figure 1) for multiplexing a plurality of formatted content streams from server modules to produce an output stream that is adapted for transport via a communication channel (MPEG remux 14 in combination with proxy server and computer 32 for multiplexing a plurality of encoded video streams from VTR, camera, external network via encoder 12 and transcoder 20 to produce an output stream that is adapt for transport via communication channel of network 34 – figure 1; col. 6, lines 15-59), wherein the multiplexing is further for formatting non-content data (formatting HTML web pages and control map into MPEG data packets – col. 25, lines 49-62; col. 6, line 60-col. 7, line 40, figure 2) and for selectively multiplexing formatted non-content data into the output stream (computer 32 generates the control map, the HTML pages and the URLs for insertion into the industry standard transport layer of MPEG-2 protocol – col. 6, lines 60-64). However, Mao does not specifically disclose multiplexing of content streams is statistically performed, and wherein the multiplexing of formatted non-content data is on a future bandwidth

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availability basis that is predicted based on the multiplexing of the formatted content streams.

Wu discloses multiplexing of content streams is statistically performed (based on TSP's need parameters – col. 6, lines 10-27, and using statistical multiplexing algorithm run on the PM 140...- Col. 4, lines 57-65), wherein the multiplexing of formatted non-content data is on a future bandwidth availability basis that is predicted based on the multiplexing of the formatted content streams (multiplexing of opportunistic data only total bandwidth used for encoded video streams by all the TSP drops below threshold – see including, but are not limited to, col. 4, lines 40-47; col. 5, lines 14-67; col. 6, line 17-26; col. 6, line 55-col. 46), wherein the claimed “future bandwidth availability” is broadly met by bandwidth allocation for later multiplexing the formatted opportunistic data after available/spare bandwidth is calculated/determined. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Mao to use the teaching as taught by Wu in order to maximize bandwidth utilization and provide cost saving and minimizes disruption to the existing encoders in the field (col. 3, lines 59-61).

Regarding claim 33, Mao in view of Wu teaches the system as discussed in the rejection of claim 32. Mao further teaches the multiplex switch includes a buffer (i.e. proxy 22) for storing non-content data (col. 25, lines 45-48) and a switch controller (i.e. computer 32) for insertion of control map and web pages into the industry standard

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transport layer of the MPEG-2 protocol (col. 6, lines 60-64). Wu also discloses buffer 162 for buffering the opportunistic data (figure 1) and a switch controller (QLP 130) for determining a bandwidth utilization level of the multiplex switch, the switch controller further for causing at least a portion of the non-content data in the buffer to be multiplexed into the output stream when the bandwidth utilization level falls below a threshold utilization bandwidth level (the QLP 130 causes the opportunistic data from buffer 162 to be multiplexed into the stream when the bandwidth utilization level drops below a threshold utilization bandwidth level – including, but are not limited to, col. 4, lines 40-47; col. 5, lines 14-67; col. 6, line 17-26; col. 6, line 55-col. 46). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Mao to use the teaching as taught by Wu in order to maximize bandwidth utilization and provide cost saving and minimizes disruption to the existing encoders in the field (col. 3, lines 59-61).

Regarding claim 34, Wu further discloses the threshold bandwidth utilization level comprises a utilization level sufficient to process a single time extent (i.e. service interval for a portion of opportunistic data). Wu further discloses digital audio and video data or any other digital data in MPEG-2 standard – col. 4, lines 6-26, lines 37-40). Thus, the content streams are inherently divided into a plurality of respective time extents (time interval corresponds to a portion/segment of the digital data).

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Regarding claim 35, Wu further discloses the content streams contain digital data in MPEG-2 standard (col. 4, lines 6-26 and lines 37-40). Thus, the content streams is inherently divided into a plurality of respect time extents (time interval associated with each segment/portion of the MPEG-2 stream). Wu further discloses each TSP, including ODP, send statistical information to the QLP 130, including e.g., a “need parameter” that indicates the bandwidth need of the TSP..., the QLP calculates the total bandwidth and allocates the available bandwidth to each individual TSP in proportion to the TSP’s need parameter. Each TSP sends packets to the multiplexer according to the bandwidth allocation (col. 5, line 10-col. 6, line 27). Since the need parameter and amount of bandwidth allocated to the TSP and the ODP are provided, the predetermined number of time extents (number of packets which associated with a time interval) are multiplexed into the output stream (for example, no packets of opportunistic data is multiplexed into the stream if bandwidth allocated for ODP is zero – col. 6, lines 17-26).

Regarding claim 36, Mao further teaches the non-content data comprises control data (i.e. control information in control map) and non-control data (i.e. web pages, URL), and the multiplex switch preferentially multiplexes the non-content control data (figures 1-4, 7; col. 6, lines 26-64; col. 7, lines 1-67).

Regarding claim 37, Mao further teaches the non-content data comprises control data (i.e. control information in control map) and non-control data (i.e., web page, URL), and

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the multiplex switch preferentially multiplexes the control data (figures 1-4, 7; col. 6, lines 26-64; col. 7, lines 1-67).

Regarding claim 38, Mao further teaches the content data includes MPEG data (col. 6, lines 25-67).

Regarding claim 39, Mao further teaches the non-content data includes Internet protocol data (HTML web page, URL, figures 1-5, col. 6, lines 26-64, col. 7, lines 1-67).

Regarding claim 40, the limitations of the method as claimed correspond to the limitations of the system as claimed in claim 32 and are analyzed as discussed with respect to the rejection of claim 32.

Regarding claim 41, Wu further teaches storing non-content data until bandwidth availability enables multiplexing of the stored non-content data (storing opportunistic data in buffer 162 until TSPs do not need all available bandwidth of the transport stream – figure 1; col. 5, lines 1-19).

Regarding claims 42-44, the limitations as claimed correspond to the limitations as claimed in claims 35, 38-39, and are analyzed as discussed with respect to the rejection of claims 35, 38-39.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Eldering et al. (US 6,820,277) discloses determining future available bandwidth and auctioning the future available bandwidth to advertisers (col. 7, line 64-col. 9, line 17).

Krebs (US 5,557,320) discloses the network control and traffic information determine optimal periods of future bandwidth availability (col. 9, lines 40-45).

Mogul et al. (US 6,243,761) discloses predict future bandwidth availability or bandwidth availability in near future (col. 6, lines 50-60).

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Son P. Huynh whose telephone number is 571-272-7295. The examiner can normally be reached on 9:00 - 6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher S. Kelley can be reached on 571-272-7331. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Son P. Huynh
June 1, 2006


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